

## **WHAT IS CLAIMED IS:**

1. A method of operating a fuel cell system having at least one fuel cell whose operating temperature is regulated by a cooling circuit that includes a cooling heat exchanger, said method comprising:

detecting an ambient temperature of the heat exchanger;

defining operating temperature of the at least one fuel cell as a function of said ambient temperature of the cooling heat exchanger, such that waste heat of the at least one fuel cell is removed at a lowest operating temperature at which such removal is possible; and

said cooling circuit controlling said operating temperature of the at least one fuel cell, to achieve said defined operating temperature.

2. The method according to Claim 1, wherein:

the at least one fuel cell comprises a PEM fuel cell; and

the fuel cell is operated at an operating temperature between 95°C and 55°C.

3. The method according to Claim 1, wherein the volume flow of a cooling medium flowing in the cooling circuit is controlled by devices for influencing the cooling of the at least one fuel cell.

4. The method according to Claim 3, wherein convection of a gas flowing around the cooling heat exchanger is influenced by the devices for influencing the cooling of the at least one fuel cell.

5. The method according to Claim 4, wherein the gas is air.

6. The method according to Claim 1, wherein the operating temperature of the at least one fuel cell is defined such that a temperature difference between a cooling medium flowing in the cooling circuit at the cooling heat exchanger and said ambient temperature is maintained at a minimum value that is sufficient to ensure removal of the waste heat generated as a function of the electric load at the at least one fuel cell.

7. The method according to Claim 1, wherein said fuel cell system is operated in a motor vehicle.

8. The method according to Claim 7, wherein the fuel cell system is operated as an auxiliary power unit (APU).

9. The method according to Claim 7, wherein the fuel cell system is operated at least as part of the driving system of the motor vehicle.

10. A method of operating a fuel cell system that includes at least one fuel cell whose operating temperature is controlled by a cooling circuit having a cooling heat exchanger, said method comprising:

determining an ambient temperature at said heat exchanger;

controlling the operating temperature of said at least one fuel cell to maintain a difference between said operating temperature and said ambient temperature at a lowest value which is sufficient to assure removal of excess heat generated by a load applied to said at least one fuel cell.